Tutorial
H-1000-5317-01-B

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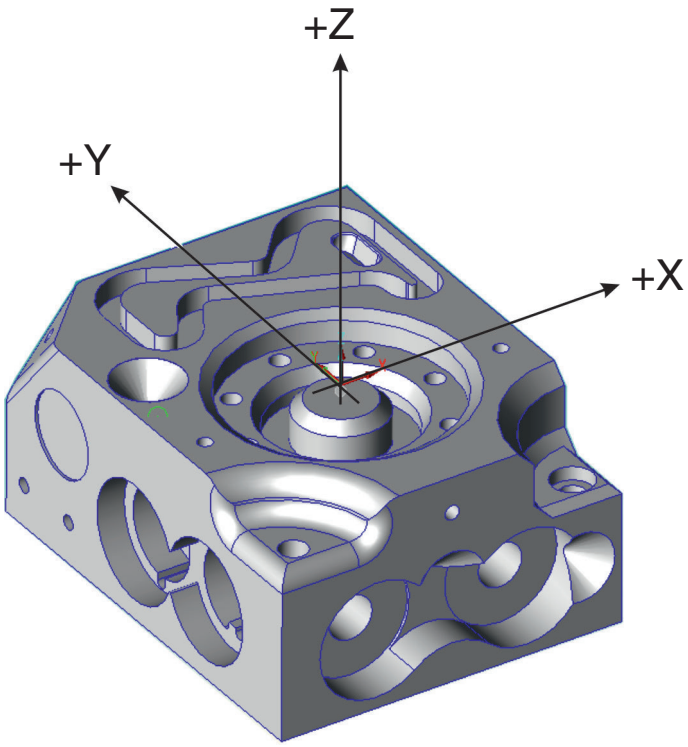
Further CNC feature measurement (CAD)



Renishaw part no: H-1000-5317-01-B

Issued: 06 2014

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Care of equipment

Renishaw probes and associated systems are precision tools used for obtaining precise measurements and must therefore be treated with care.

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Contents

1 Further CNC feature measurement (CAD)

1.1 Tutorial pre-requisites

- The student should have completed, and have a sound knowledge of all ‘Alignment’ tutorials

1.2 Tutorial objectives

- Further exposure to feature measurement using data obtained from a CAD model
- Introduction to the use of ‘multi’ features
- Introduction to measurement in ‘AUTO’ mode and the settings that apply

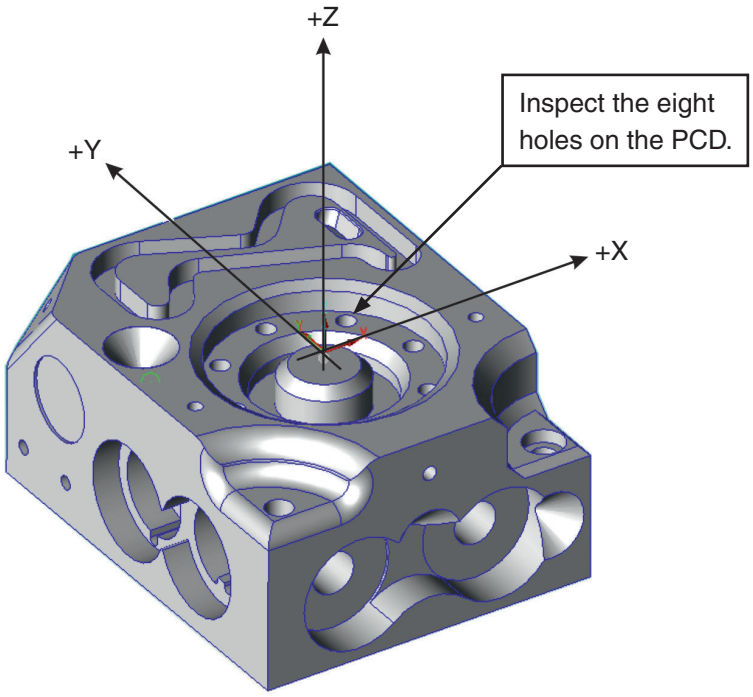
2 Introduction

This tutorial will introduce the student to further CNC feature measurement options including multi-feature measurement. Additionally, the student will be introduced to a measurement settings and measurement options specific to running a program using automatically calculated movement and measurement paths.

3 Measuring multiple holes

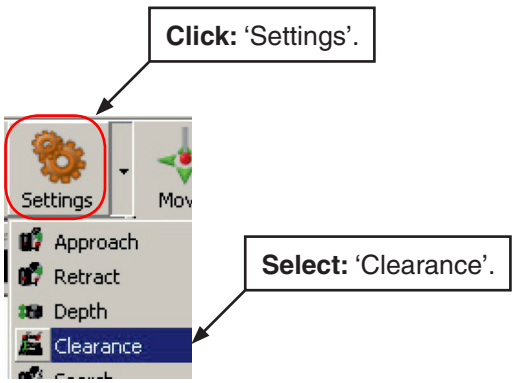
Prior to using this tutorial the part must be precisely aligned as described in previous tutorials.

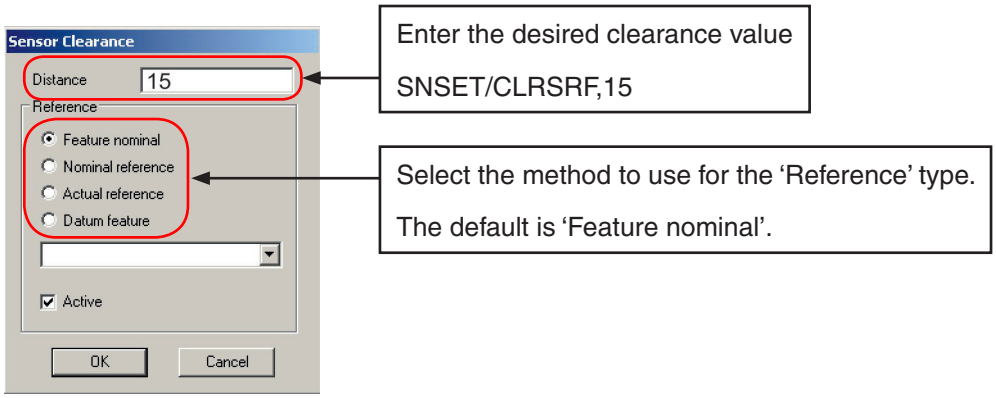
In this tutorial, the eight holes on the PCD will be measured automatically (as shown in the diagram below):



Firstly a clearance plane should be set. This sets the distance that the CMM moves away from a feature before inspecting the next feature.

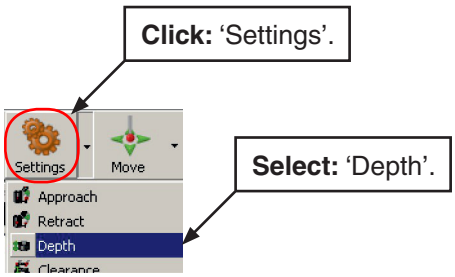
To set the value for the clearance plane:

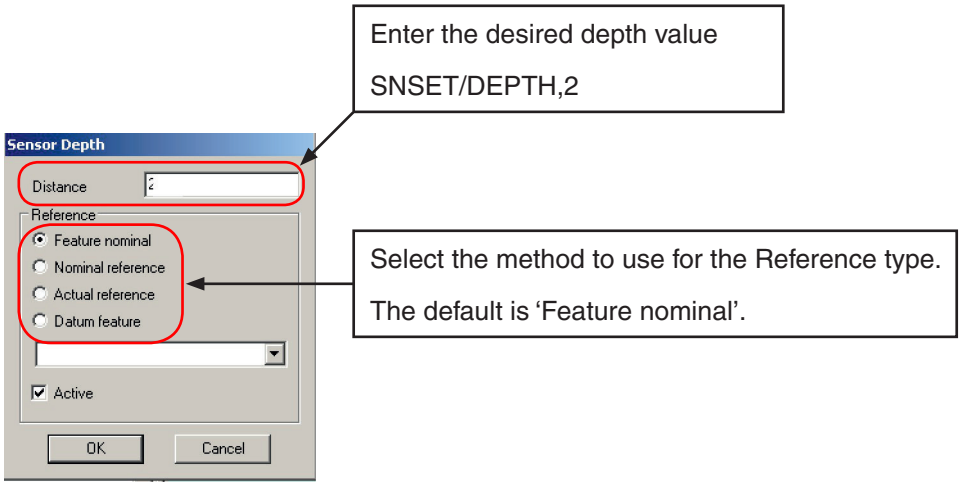




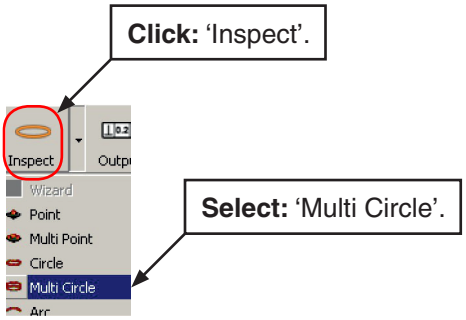
Next, the sensor depth should be set. This is the distance into a feature (hole, slot etc.) that the CMM will take the probe to inspect the feature.

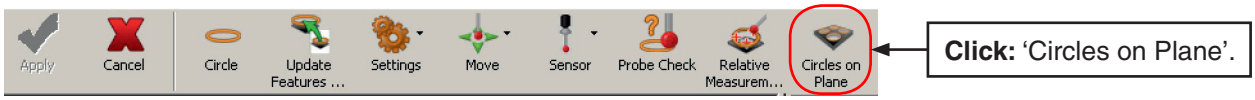
To set the value for the depth away from the nominal:

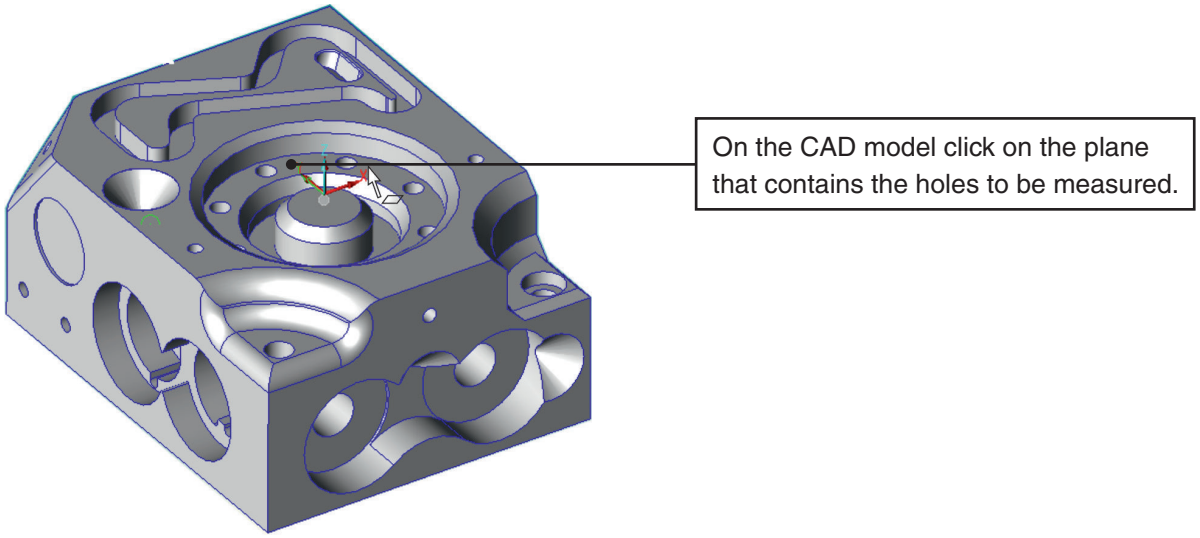




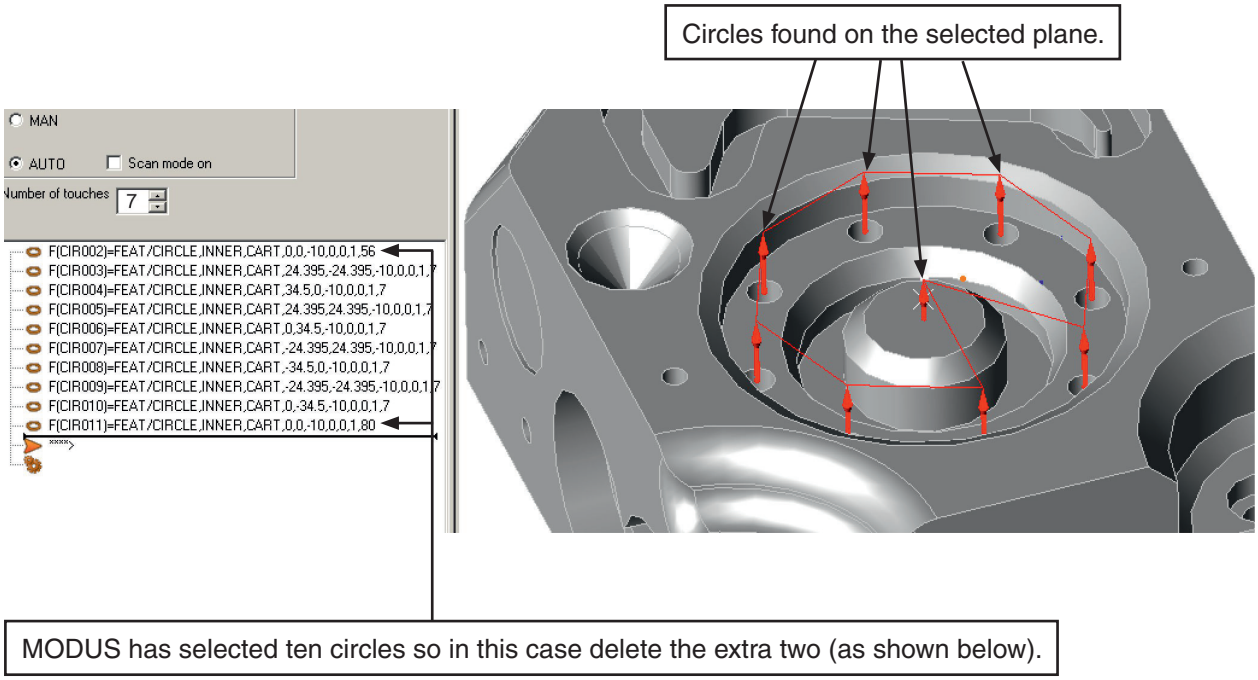
The features can now be inspected:

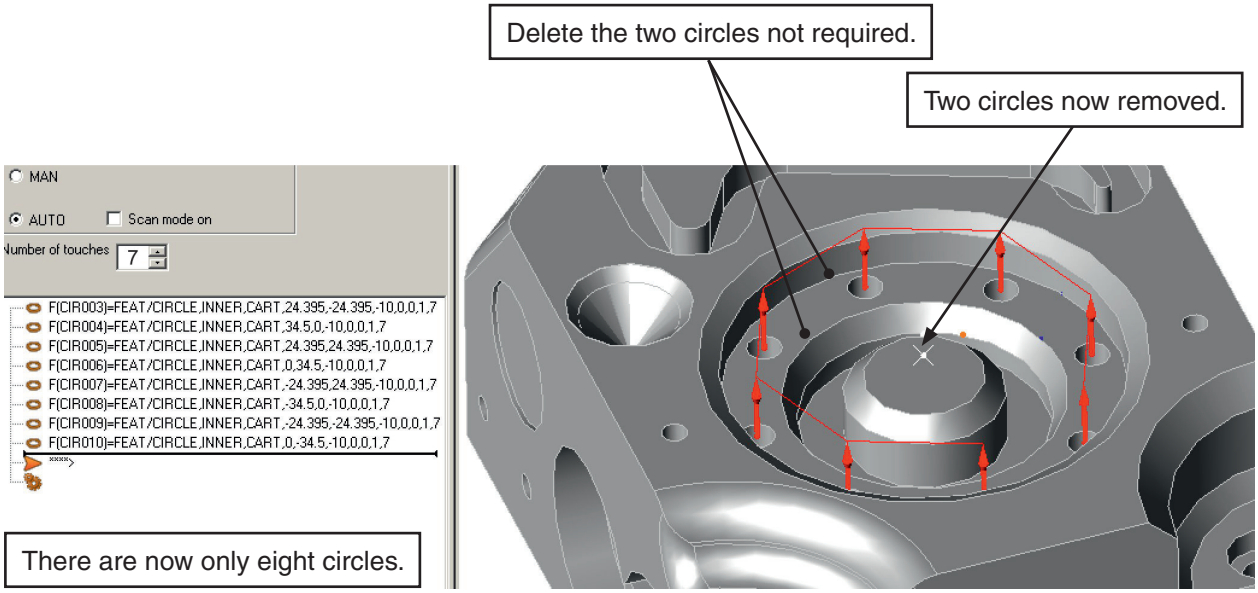




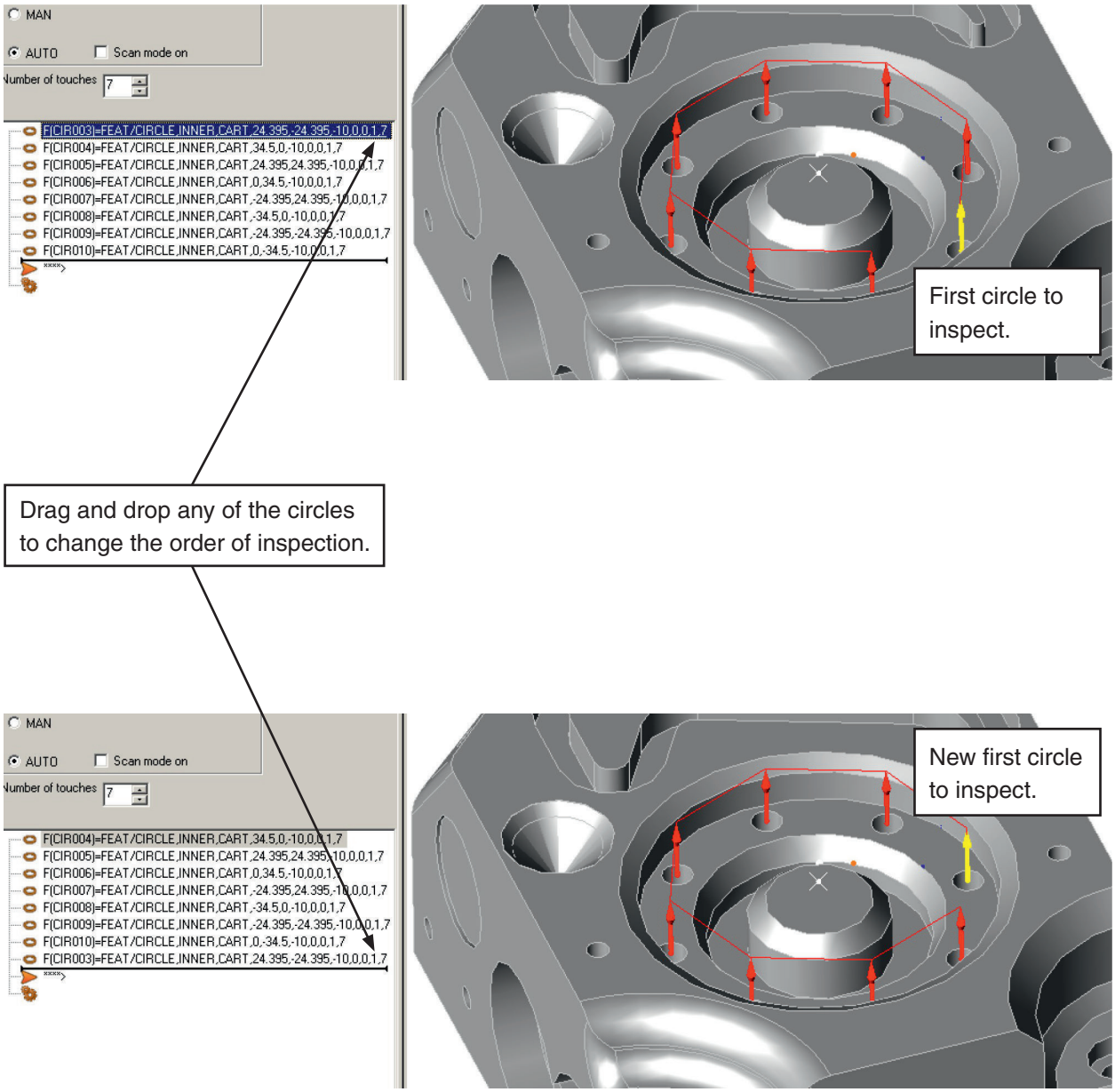


MODUS now places an arrow in the centre of each circle found on the selected plane and draws a path the CMM will take:



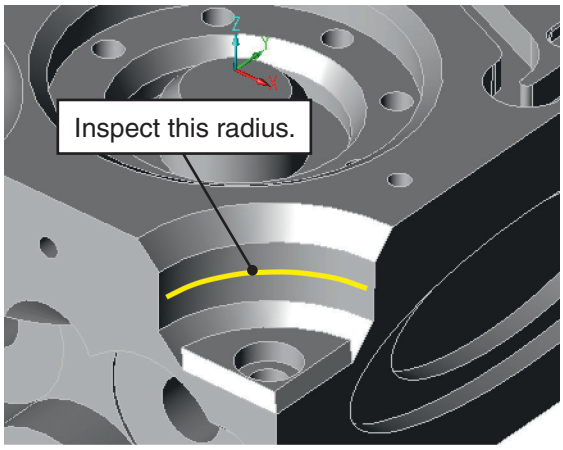


Now change the order / sequence, if desired, of each hole inspection by using drag and drop:



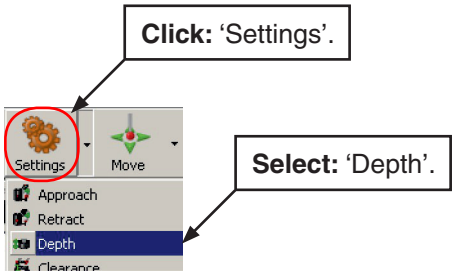
4 Measuring arcs

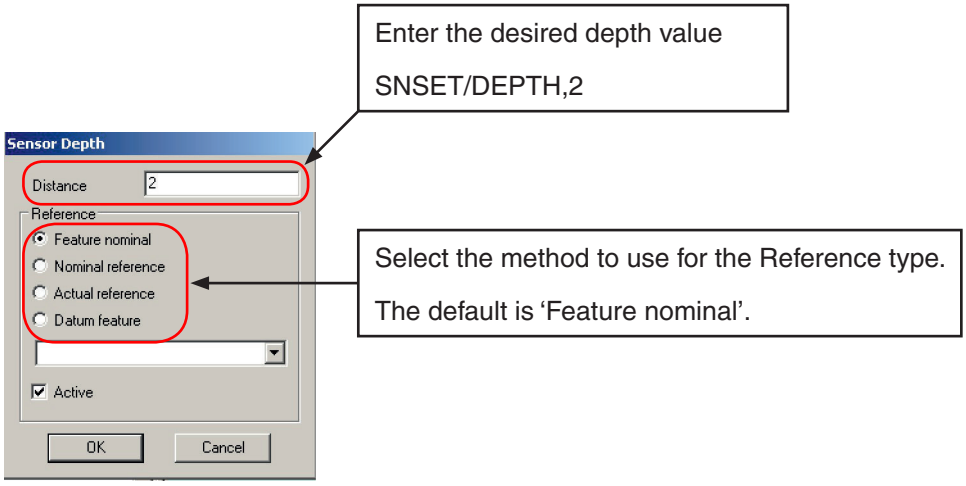
The diagram below shows which radius will be inspected:



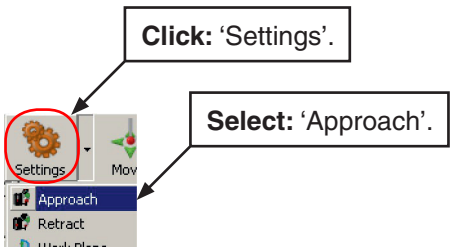
Move the probe to a clear position to inspect the radius then create a GOTO. This can be done either in MODUS by selecting ‘Move’ and clicking ‘Absolute’ or by clicking ‘Take Point’ on the MCU.

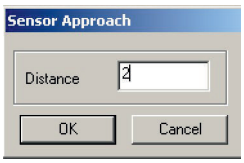
Set a value for the depth away from the nominal by clicking ‘Settings’ then selecting ‘Depth’.

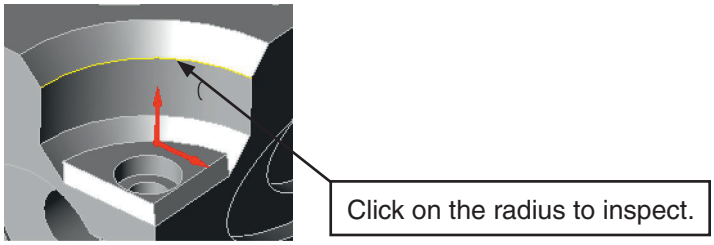


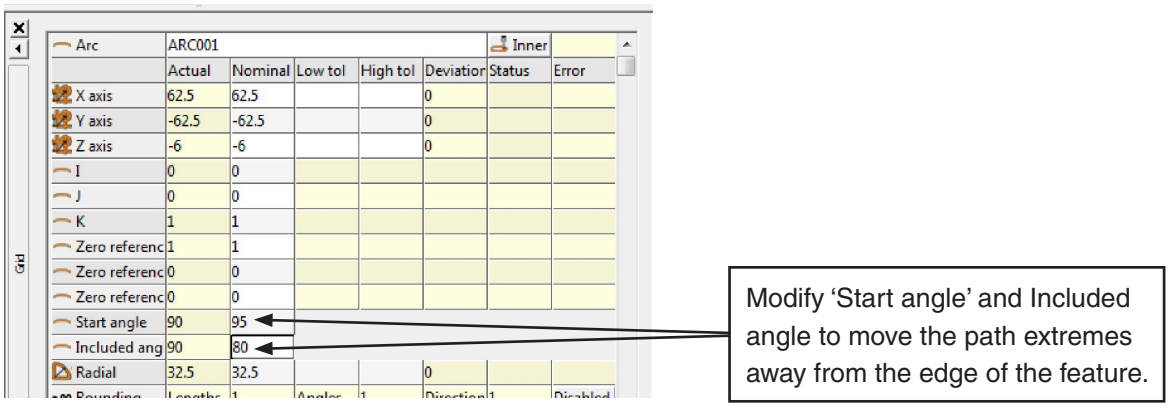


Click ‘Settings’ then select ‘Approach’ to set the approach distance.

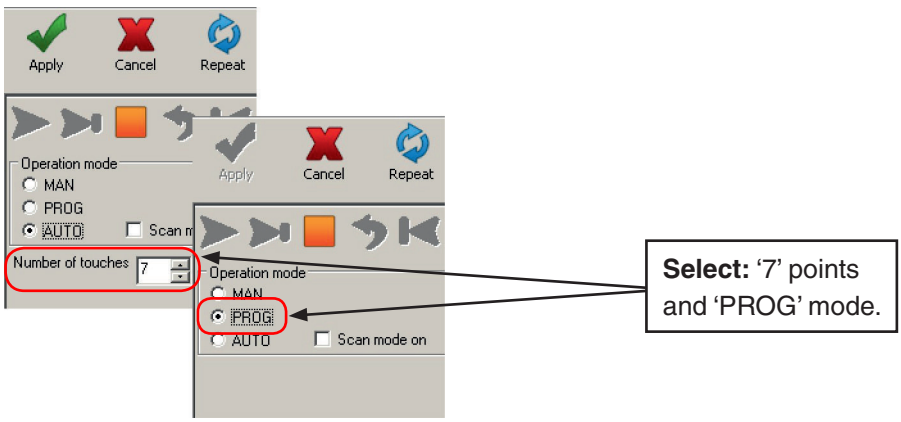


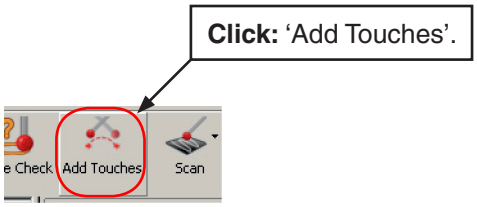


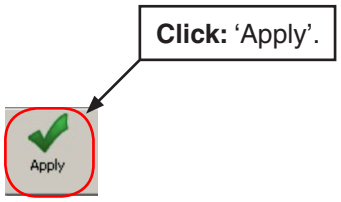


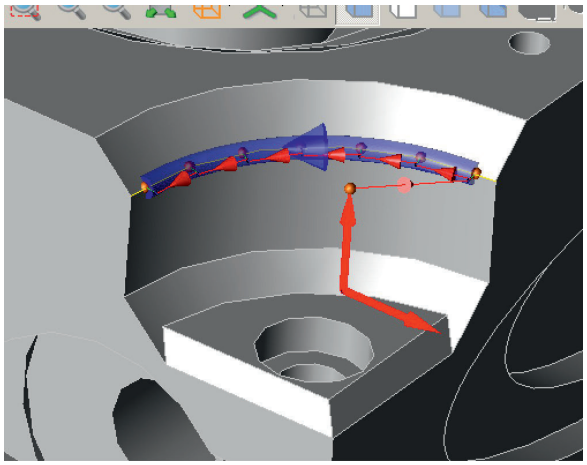


GUIDANCE NOTE: The ‘Number of touches’ input is not available when ‘PROG’ mode is selected. To specify the number of touches required in ‘PROG’ mode, values must be modified in ‘AUTO’ mode before changing to ‘PROG’ mode.

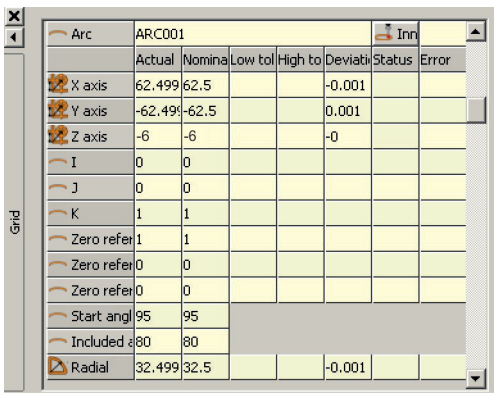








The CMM will now measure seven points around the arc at a position LOWER than the CAD nominal as specified by the DEPTH function.



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